



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,903	07/14/2003	Richard A. Kelley	10019589-2	6836

7590

09/06/2005

HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
P. O. Box 272400  
Fort Collins, CO 80527-2400

EXAMINER
----------

NGUYEN, LAM S

ART UNIT	PAPER NUMBER
----------	--------------

2853

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/618,903	<b>Applicant(s)</b> KELLEY ET AL.	
	<b>Examiner</b> LAM S. NGUYEN	<b>Art Unit</b> 2853	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 June 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 9-18, 23-28 and 32-37 is/are rejected.
- 7) ☒ Claim(s) 5-8, 19-22 and 29-31 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 14 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 13-17, 23-27, 32-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al. (US 6629787).

Lee et al. discloses an inkjet printing apparatus having an adjustable source-to-media spacing, comprising:

**Referring to claims 13, 24, 32:**

a sensor which senses a media type (*FIG. 3-5: The sensor 40 senses the thickness of the printing medium P to determine if the printing medium is in a thin or thick type*);

an inkjet print source which ejects ink onto the media surface within the print zone (*FIG. 3-5, element 33a*); and

a controller which adjusts the inkjet print source relative to the media to control source-to-media spacing as a function of the sensed media type (*FIG. 3-5, element 60 and Abstract*).

**Referring to claims 14, 25, 34, 36:** further comprising a carriage (*FIG. 3-5, element 30*) which carries the inkjet print source across the media surface, wherein said sensor senses the

Art Unit: 2853

media type and the controller adjusts the inkjet print source relative to the media, based on the sensed media type, to control source-to-media spacing as the carriage slews the inkjet print source across the media surface (*FIG. 3-7 and Abstract*).

**Referring to claims 15, 26, 35:** wherein the sensor moves with the carriage (*FIG. 3-5: Since the sensor 40 is attached to the carriage 30, the sensor moves with the carriage*).

**Referring to claims 16, 27:** wherein said controller varies the inkjet print source relative to the media multiple times during a single slew of the carriage across the media to maintain the source-to-media spacing (*FIG. 3-7: The gap is adjusted in real time while the carriage is moving across the printing medium P*).

**Referring to claims 17, 33:** wherein said controller adjusts a height spacing of the inkjet print source relative to a support carrying the media (*FIG. 3-7: The controller 60 adjusts the distance between the head 33a to the printing medium P. In other words, the controller 60 adjusts the height of the print head 33a relative to the media support 11*).

**Referring to claim 23:** further comprising a cam (*FIG. 8, element 143*) and a motor (*FIG. 3-5, element 53*), the motor for rotating the cam, the cam mechanically coupled to the inkjet print source, the motor responsive to the controller by altering a height of the inkjet print source relative to a support carrying the media.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 13, 17-18, 24, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nokawa (US 6273536) in view of Ahne et al. (US 6406110).

**Referring to claims 1-3, 13, 24:**

Nokawa discloses a print system, including a host (*FIG. 3, element 1010*) communicating with an inkjet print apparatus (*FIG. 3, element 23*), wherein the host comprises a processor (*FIG. 3, element 1000*) which executes an inkjet print driver (*FIG. 3, elements 25, 27*), the inkjet print driver managing communication of a print job to the inkjet print apparatus, the print job including print data and at least one print control parameter identifying a sensed media type (*column 5, lines 5-11: The control unit (host) 1010 outputs signals to drive the recording head and the carriage motor for print job and the motor 29 to adjust the head-to-paper gap. Column 4, lines 64-67: The control unit 1010 controls the head-to-paper gap depending on the type of the recording medium*), the inkjet print apparatus comprising an inkjet print source (*FIG. 3, element 6: RECORDING HEAD*) which records the print data onto a media, and a mechanism which adjusts source-to-media spacing (*FIG. 3, element 29: HEAD-TO-PAPER GAP CONTROL MOTOR*) based on the sensed media type (*FIG. 4: The gap is set in accordance to the type of the printing media such as ordinary paper or film medium*).

Nokawa, however, is silent wherein the ink jet print apparatus comprises a controller that responds to a first parameter of said at least one print control parameter to control setting of the source-to-media/support carrying spacing by said adjusting mechanism for the print job, a sensor for sensing the media type (**Referring to claims 1-3, 13, 17**), and means for calibrating the sensor to account for variation in sensed media surface according to media type (**Referring to claims 18, 28**).

Ahne et al. discloses an imaging apparatus including a printer controller (*FIG. 7, element 30*) that responds to a parameter representing a characteristic of a printing medium from an input device *136* to control setting of a printhead-to-media gap by outputting a signal to a motor (*FIG. 7, element 130*) to adjust the head-to-media spacing (*FIG. 8: The controller adjusts the gap in accordance to the received input associated with print medium*), a sensor for sensing the media type (*column 6, lines 61-65: The sensor 134 provides a signal indicating an actual measured thickness of the print medium that defines if the printing medium is thin or thick*), and means for calibrating the sensor to account for variation in sensed media surface according to media type (*column 6, line 65 to column 7, line 5: A look-up table which correlates a particular reflectance to a particular medium thickness is used to calibrate the sensor*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify the ink jet printing apparatus disclosed by Nokawa to include the controller responding to the print media parameter to set the head-to-media spacing as disclosed by Ahne et al. The motivation for doing so would have been to obtain an advantage that the head-to-medium gap can be optimized for each type of media accommodated by the imaging apparatus as taught by Ahne et al. (*column 2, lines 31-35*).

3. Claims 4, 9-12, 14-16, 23, 25-27, 32-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nokawa (US 6273536) in view of Ahne et al. (US 6406110), as applied to claims 1, 13, 24 and further in view of Lee et al. (US 6629787). (For the rejection regarding to claim 37, please see the rejection regarding to claims 18, 28).

Nokawa, as modified, discloses the claimed invention as discussed above except a sensor which senses a surface of the media within a vicinity of a print zone, wherein the controller

Art Unit: 2853

responding to the sensed surface to maintain the source-to-media spacing as the carriage slews the inkjet print source across the media surface (**Referring to claim 11**), wherein said controller adjusts the adjusting mechanism multiple times during a single slew of the carriage across the media to maintain the source-to-media spacing generally constant with changes in contour of the media surface (**Referring to claims 12, 14-16, 25-27, 32-36**), wherein the adjusting mechanism comprises a cam and a motor, the cam having a plurality of positions with respective, associated source-to-media spacings, the controller outputting a signal to the motor to adjust the source-to-media spacing (**Referring to claims 4, 10, 23**), wherein there is a cam position for at least three select source-to-media spacings, including a first source-to-media spacing for a media type comprising non-cockling media, a second source-to-media spacing for a media type comprising cockling media, and a third source-to-media spacing for a media type comprising envelope media (**Referring to claim 9**).

Lee et al. discloses a printing apparatus for adjusting a head gap of an ink jet printer including a gap detecting sensor (*FIG. 3-5, element 40*) provided on a carriage (*FIG. 3-5, element 31*) for sensing a surface of printing media (*FIG. 3-5, element P*) within a vicinity of a print zone and a controller (*FIG. 3-5, element 60*) for controlling the head gap in accordance with an output signal of the gap sensor (*Abstract*), wherein the controller adjusts the adjusting mechanism multiple times during a single slew of the carriage across the media to maintain the source-to-media spacing generally constant with changes in contour of the media surface (*FIG. 3-7 and column 10, lines 10-20*), a cam (*FIG. 8, element 143*), and a motor to adjust the source-to-media spacing (*FIG. 7, element 147*), the cam having a plurality of positions with respective, associated source-to-media spacings (*FIG. 7, element 145*) in accordance to the thickness of the

Art Unit: 2853

printing medium such as the one of an envelop or an A4 sheet (*column 5, line 65 to column 6, line 3*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify the ink jet printing apparatus disclosed by Nokawa, as modified, to include the gap detecting sensor for sensing a surface of printing media within a vicinity of a print zone as disclosed by Ahne et al. The motivation for doing so would have been to move the sensor together with the printhead so the gap between the head and printing medium can be detected and adjusted in real time as a common technique well known in the art.

#### ***Allowable Subject Matter***

Claims 5-8, 19-22, 29-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The reasons for allowance were indicated in the previous office action.

#### ***Response to Arguments***

Applicant's arguments filed 06/23/2005 have been fully considered but they are not persuasive.

In response to the applicants' argument that Lee et al. does not disclose a sensor for sensing a media type, the examiner cites that even though Lee et al.'s sensor detects the length or distance of the head gap, this length or distance depends on the thickness/thinness of the printing medium P. For example, when the printing medium P is thicker, the detected data about the length/distance of the head gap G is determined to be lower than the predetermined reference value, thereby requiring an increase of the head gap G (*column 5, lines 40-45*). In contrast, when



Art Unit: 2853

the printing medium P is thinner, the detected data about the length or distance of the head gap G is determined to be higher than the predetermined reference value, thereby a decrease of the head gap is required (*column 5, line 65 to column 6, line 11*). As a result, the detected data outputted by the sensor directly/indirectly indicates both the length/distance of the head gap and the thickness/thinness of the printing medium. Moreover, as broadly interpreted, a type of a printing medium may be defined by its thickness or thinness. In conclusion, Lee et al.'s sensor senses the printing medium type based on the thinness/thickness of the printing medium.

In addition, the applicant asserted that the Ahne et al. reference fails to cure the deficiencies of the Nozawa reference, but admitted that Ahne et al. appears to teach a print medium sensor which senses the thickness of the print medium. Again, as broadly interpreted, a type of a printing medium may be defined by its thickness or thinness; therefore, Ahne et al.'s sensor is considered as sensing the type of the printing medium based on its thickness/thinness.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 2853

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Contact Information***

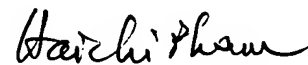
Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S. NGUYEN whose telephone number is (571)272-2151.

The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D. MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN  
08/31/2005



HAI PHAM  
PRIMARY EXAMINER